



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,254	07/01/2003	Pierre-Yvan Liardet	S01022.81054.US	1137
23628 7590 12/14/2007 WOLF GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206			EXAMINER LEMMER, SAMSON B	
			ART UNIT 2132	PAPER NUMBER
			MAIL DATE 12/14/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/611,254

Applicant(s)

LIARDET ET AL.

Examiner

Samson B. Lemma

Art Unit

2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 and 7 is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 8-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date held on 08/15/2007.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### ***DETAILED ACTION***

1. This office action is in reply to an amendment filed on September 25, 2007.  
**Dependent claim 3 is written in independent form. Thus claims 1-17 are pending/examined.**
2. On August 15, 2007, Applicant's representative **Joseph Teja Jr ( Reg. No. 45,157)** and Examiner discussed the features recited in the claims with respect to the reference used in rejecting them. Furthermore, In view of the telephone conversation and further explanation made by the applicant's representative, the Examiner agreed that the claims as pending are supported by the specification and the pervious 112 rejection set forth in the previous office action is overcome and withdrawn.

### ***Response to Arguments***

3. Applicant's remark/arguments filed on September 25, 2007 have been fully considered but they are not persuasive.

Applicant's representative argued that the following limitation recited in the independent claims "**wherein the at least one first random number comprises a plurality of blocks of bits and wherein each block of bits is identical.**" is not disclosed by the reference on the record.

Applicant's representative wrote the following in support of his argument.

"More specifically, there is no teaching to be found in either Snell or the admitted prior art of the exact contents of the random numbers. The Office Action asserts on page 4 that this limitation is taught in Applicants' admission of prior art, but the methods describe in the background of the instant application do not disclose any such requirement. Both the admitted prior art and Snell simply disclose generating random numbers of a necessary length--Snell going one step further, requiring that the

length of the random number equal that of the data to be ciphered--but neither reference discloses that the **contents of the random number be limited to one in which all the blocks of bits are identical**. Since claim 1 does recite the random number being comprised of a plurality of blocks of bits, and wherein each block of bits is identical, neither the admitted prior art nor Snell, alone or in combination, teaches or suggests all elements of the claims."

**Examiner disagrees with the above argument.**

Examiner would like to point out that the limitation is interpreted in view of the specification. Note that the specification indicates the fact that the "first random number **having the size of said code** and all the blocks of each have the same value" Therefore, In view of the above understanding, Examiner interprets such limitation as "first random number having the size of said code and all the blocks of each have the same value." And such limitation is already disclosed by the reference/s on the record.

In order to show how each and every limitation of at least the independent claims are disclosed by the reference on the record, the examiner would show the following.

**Admission discloses a cyphering/decyphering method** [page 1, lines 17-18] (AES "Advanced Encryption Standard, "cyphering/deciphering") by **an integrated circuit**, [page 3, line 21] (implementation on smart cards of AES-type algorithms) **of a digital input code (S<sub>0</sub>, S<sub>n</sub>)** [page 1, lines 25-26] **by means of several keys (K<sub>i</sub>),**[page 1, lines 20-21] ("different ciphering keys") **consisting of:**

- **Dividing said code into several data blocks of same dimensions;**

[page 1, lines 19-21 and page 1, lines 27-28] (On page 1, lines 19-21, it has been

recited that the code is divided and on page 1, lines 27-28, it is disclosed that that each block has the same size) and

- **Applying to said blocks multiple turns (T) of a cyphering or decyphering consisting of submitting each block to at least one same non-linear transformation (SUBBYTES, INVSUBBYTES) [page 2, lines 12-29 and figure 3, ref. Num "4" and figure 4, ref. Num "24"] and of subsequently combining each block with a different key (Ki) at each turn, [page 2, lines 12-14 and page 1, lines 20-21] and**

- **Masking the inputs and outputs of the non-linear transformation, upon execution of the method, by means of at least one first random number (R1) [page 4, lines 2-6; page 4, lines 7-19 and page 5, lines 7-11] having the size of said code and all the blocks of which have the same value by combining, by an XOR-type function, the input and output blocks of the non-linear transformation with said random number. [Page 4, lines 2-6; page 4, lines 7-19 and page 5, lines 7-11 and figure 3, ref. Num "12", ref. Num, "13" and figure 4, ref. Num "22" and ref. Num "23" & figure 4 and 5]**

- Admission does not explicitly teach the limitation recited into the respective independent claims **"wherein the at least one first random number comprises a plurality of blocks of bits and wherein each block of bits is identical."**

Note that the specification indicates the fact that the "first random number **having the size of said code** and all the blocks of each have the same value"

Therefore, In view of the above understanding, Examiner interprets such limitation as **"first random number having the size of said code and all the blocks of each have the same value."**

However, in the field of endeavor **Snell**, discloses

- The circuit wherein the pseudo-random generator and XOR array of the dummy circuit **having a word width in bits identical** to that of pre-mix subcircuit in the which it is configured to perform AES or Advanced Encryption standard. [Abstract; claim 1 and 7]

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-2, 4-6 and 8-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (hereinafter referred to as **Admission**) in view Snell (hereinafter referred to as **Snell**) (US Publication No. 2003/0223580 A1) (claims priority of provisional application No. 60/383,252 filed on 05/23/2002)

6. **As per claims 1, 8, 10 and 15-17, Admission discloses a cyphering/decyphering method** [page 1, lines 17-18] (AES "Advanced Encryption Standard, "cyphering/deciphering") by **an integrated circuit**, [page 3, line 21] (implementation on smart cards of AES-type algorithms) **of a digital input code (S<sub>0</sub>, S<sub>n</sub>)** [page 1, lines 25-26] **by means of several keys (K<sub>i</sub>)**, [page 1, lines 20-21] ("different ciphering keys") **consisting of:**

- **Dividing said code into several data blocks of same dimensions;**  
[page 1, lines 19-21 and page 1, lines 27-28] (On page 1, lines 19-21, it has been recited that the code is divided and on page 1, lines 27-28, it is disclosed that that each block has the same size) and
- **Applying to said blocks multiple turns (T) of a cyphering or decyphering consisting of submitting each block to at least one same non-linear transformation (SUBBYTES, INVSUBBYTES) [page 2, lines 12-29 and figure 3, ref. Num "4" and figure 4, ref. Num "24"] and of subsequently combining each block with a different key (Ki) at each turn, [page 2, lines 12-14 and page 1, lines 20-21] and**
- **Masking the inputs and outputs of the non-linear transformation, upon execution of the method, by means of at least one first random number (R1) [page 4, lines 2-6; page 4, lines 7-19 and page 5, lines 7-11] having the size of said code and all the blocks of which have the same value by combining, by an XOR-type function, the input and output blocks of the non-linear transformation with said random number. [Page 4, lines 2-6; page 4, lines 7-19 and page 5, lines 7-11 and figure 3, ref. Num "12", ref. Num, "13" and figure 4, ref. Num "22" and ref. Num "23" & figure 4 and 5]**
- Admission does not explicitly teach the limitation recited into the respective independent claims "**wherein the at least one first random number comprises a plurality of blocks of bits and wherein each block of bits is identical.**"

Note that the specification indicates the fact that the "first random number **having the size of said code** and all the blocks of each have the same value"

Therefore, In view of the above understanding, Examiner interprets such limitation as “**first random number having the size of said code and all the blocks of each have the same value.**”

However, in the field of endeavor **Snell**, discloses

- The circuit wherein the pseudo-random generator and XOR array of the dummy circuit **having a word width in bits identical** to that of pre-mix subcircuit in the which it is configured to perform AES or Advanced Encryption standard. [Abstract; claim 1 and 7]

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to add the features of the circuit wherein the pseudo-random generator and XOR array of the dummy circuit having a word width in bits identical to that of pre-mix subcircuit in the which, it is configured to perform AES or Advanced Encryption standard as per teachings of **Snell** in to the method as taught by **Admission**, in order to counteract differential power analysis attacks in symmetric key block cipher algorithm such AES/Rijndael. [See, **Snell**, Paragraph 0002]

7. **As per claim 2**, the combination of **Admission and Snell** discloses the method as applied to claims above. Furthermore, Admission discloses the method, consisting of combining the input code ( $S_0, S_n$ ) with a second random number ( $R$ ) of same dimension as the code. [page 5, lines 7-11, figure 4, ref. Num “23” RD2]
8. **As per claims 4 and 14**, the combination of **Admission and Snell** discloses the method as applied to claims above. Furthermore, Admission discloses the method wherein, any of claims 1 to 3, applied to an AES-type cyphering algorithm. [page 1, lines 17-24, figure 1-4]



9. **As per claims 5-6 and 11-13**, the combination of Admission and Snell discloses the method as applied to claims above. Furthermore, Admission discloses the method, wherein said first random number (R1) is changed at each cyphering turn. [Figure 3, figure 4, page 4, lines 7-19; page 5, lines 7-8, figure 4, ref. Num "22 & 23" RD1 & RD2] (Since at each turn, the key changes so does the random number)
10. **As per claim 9**, the combination of Admission and Snell discloses the method as applied to claims above. Furthermore, Admission discloses the method, comprising means for implementing the method of any of claims 1 to 7. [figure 3 & figure 4]

### ***Allowable Subject Matter***

11. Independent **Claim 3 and dependent claim 7**, are allowed.

### ***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
- A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samson B Lemma whose telephone number is 571-272-3806. The examiner can normally be reached on Monday-Friday (8:00 am---4: 30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BARRON JR GILBERTO can be reached on 571-272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**SAMSON LEMMA**  
**S.L.**  
**12/03/2007**

  
**GILBERTO BARRON JR**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2100**